Proton Plan Status
June Report

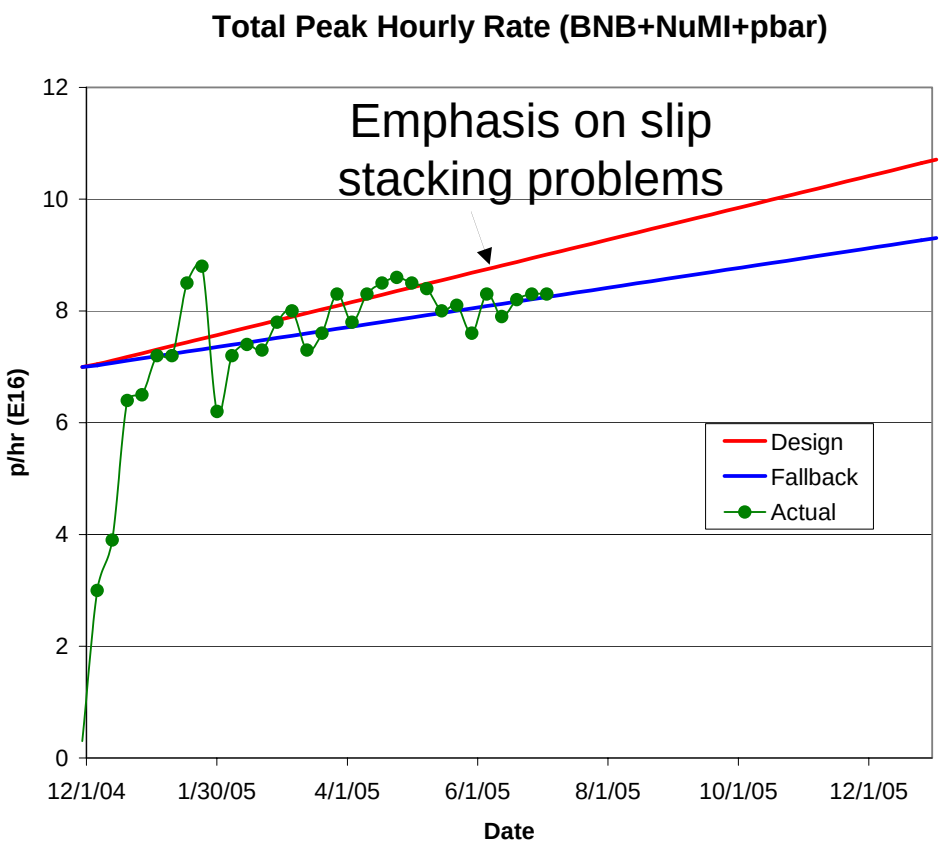
Eric Prebys

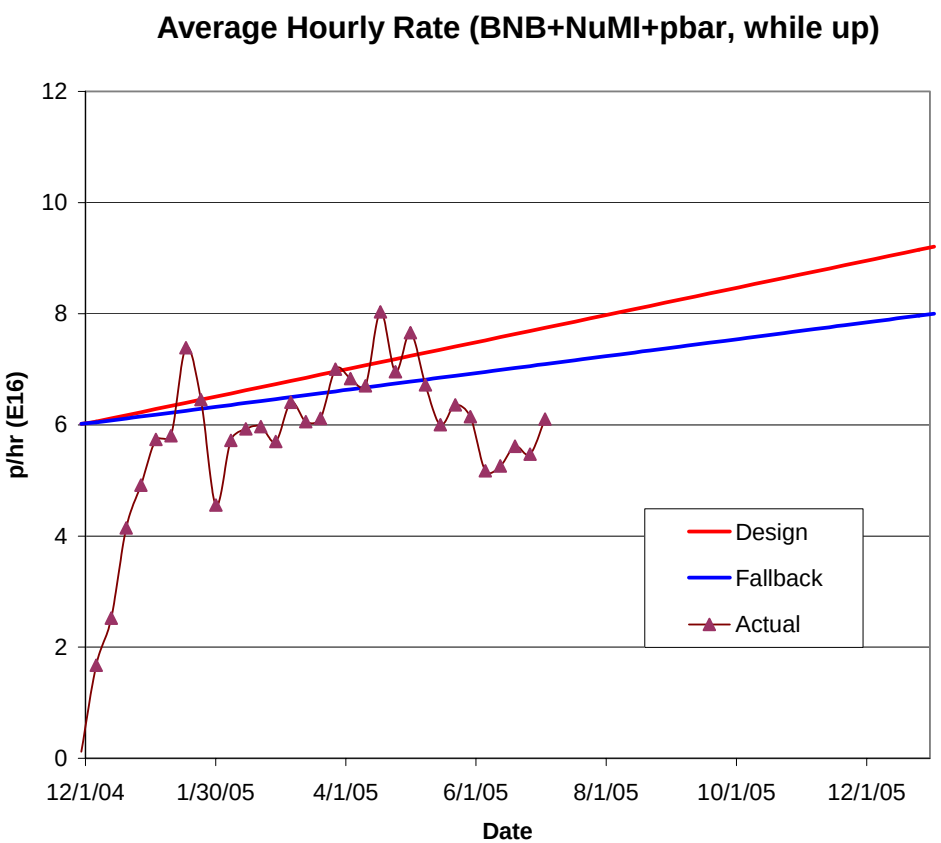
Agenda

- Operations Report – E. Prebys
- Technical Progress – E. Prebys
- Booster Corrector AIP Status – C. Drennan
- Project Status and Cost Report – J. Sims
- Plan for Baselining – B. Baller

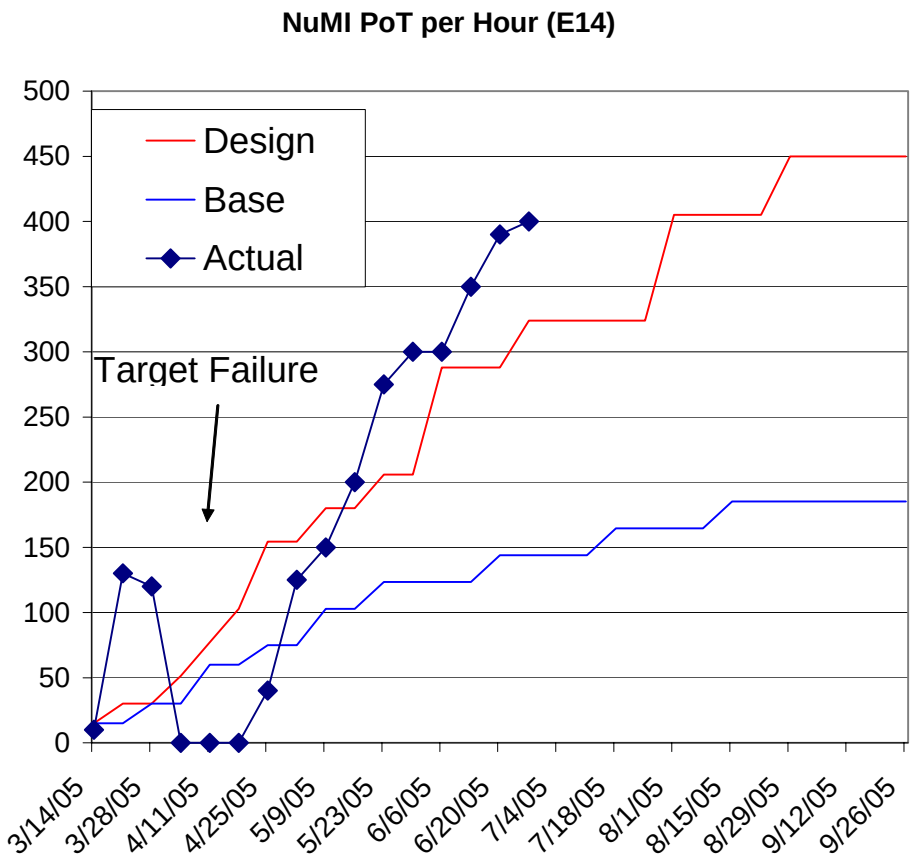
Operations Report

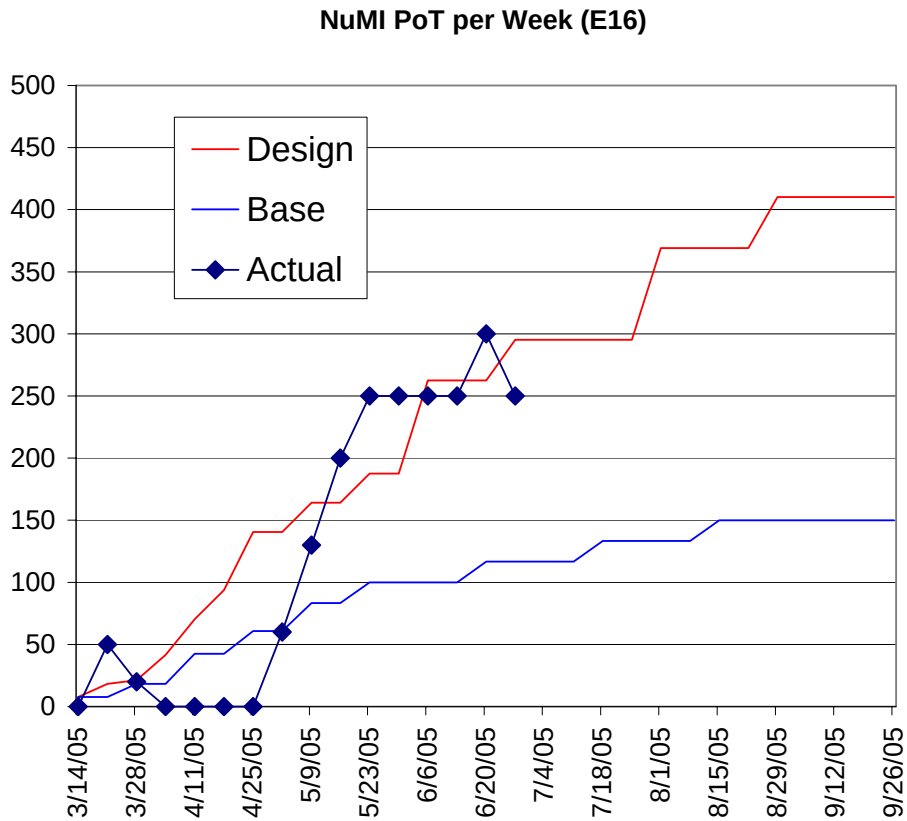
Total Hourly Proton Rate



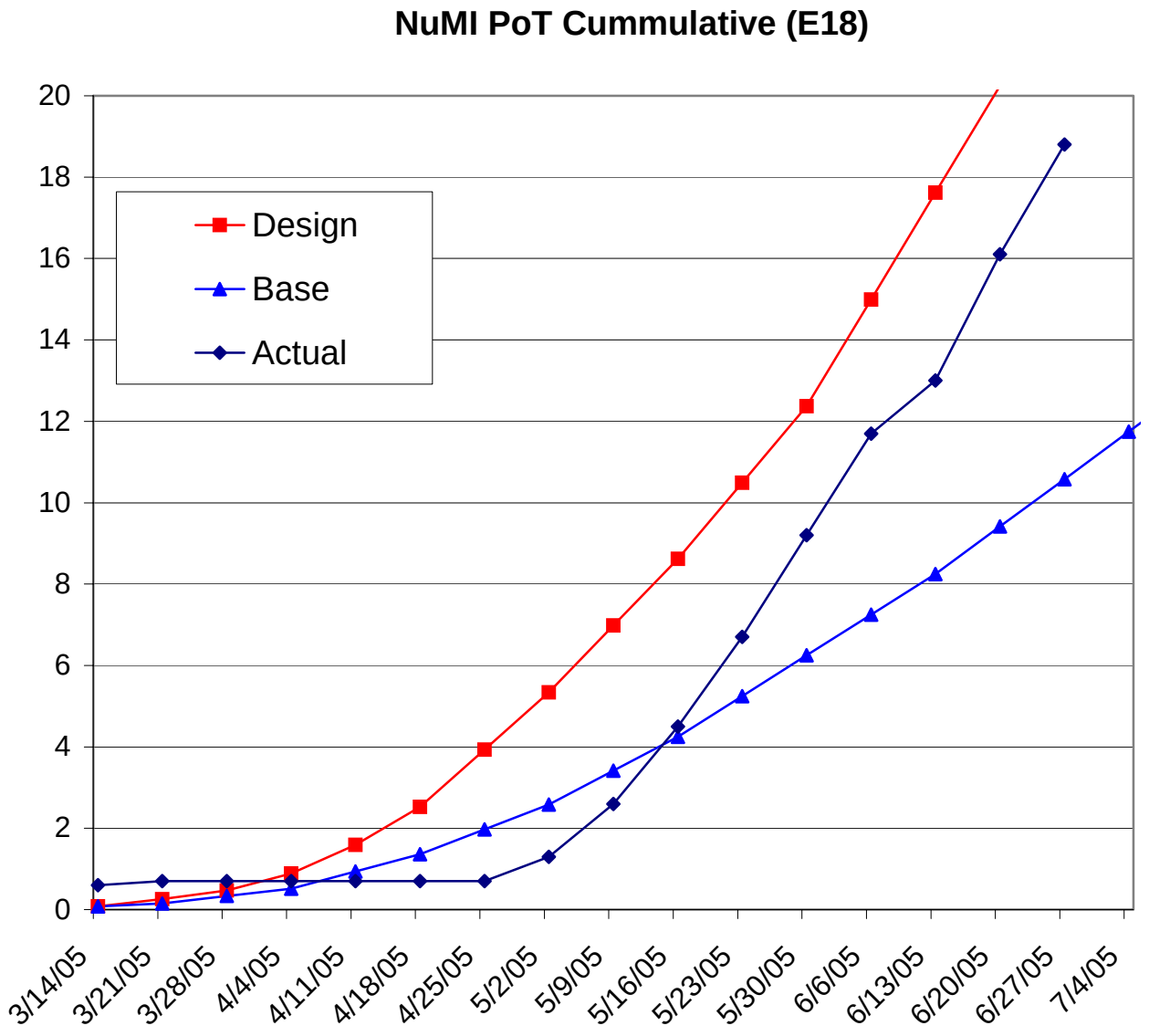


NuMI Proton Delivery

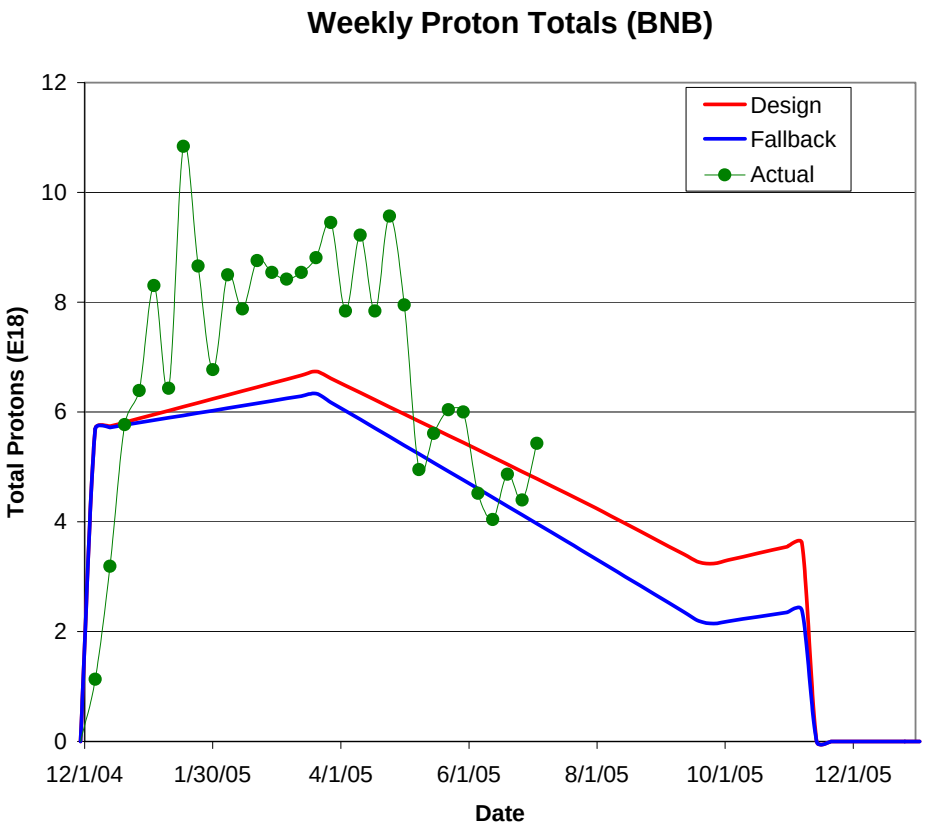


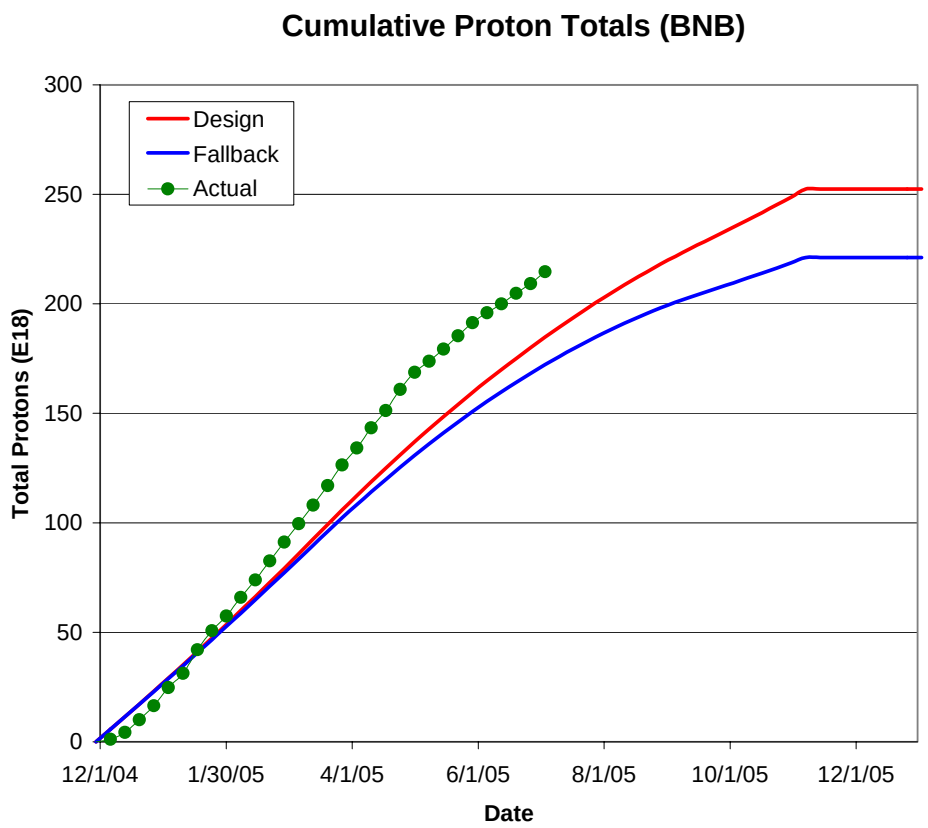


NuMI Integrated (almost caught up)



MiniBooNE (BNB) Delivery





Technical Progress

Scope Changes Since Last PMG

- Modified:
  - 1.1.2 (Quad power supplies)
    - Significantly reduced in scope
    - Keep original supplies and upgrade controls electronics
    - $1M+ -> ~$200K
  - 1.2.1 (Determine rep rate limits)
    - Modified to include RF reliability concerns
  - 1.3.4 (MI RF Upgrade)
    - *Significantly* reduced in scope
    - (more in a bit)
- Added:
  - 1.2.12 (Booster RF Improvements)
    - Systematic plan (based on 1.2.1) to refurbish Booster RF modulators
- Descoped:
  - 1.2.6 (Booster alignment)
    - Decided to treat as part of normal operations
  - 1.2.8 (Cavity 20)
    - Manpower limitations. Limited success of cavity 19

Progress

- Baseline plan
  - Aim for a director's baseline review 7/21
  - B. Baller will give more details
- Technical Progress

  Linac
  - 1.01.01 PA Vulnerability –
    - Committee report complete

  Booster
  - 1.02.01 Determine rep. rate limit
    - Good understanding of what limits repetition rate and reliability
    - Generating report
    - Suggesting a plan of action (1.02.12)
  - 1.02.02 Orbump (+ 400 MeV line) –
    - New injection scheme passed review!
    - Three magnets built
    - Beamline and girder design more or less complete
    - Power supply passed review
    - Will be ready for shutdown

Progress

Booster

- 1.02.03 Correctors –
  - Design nearly complete
  - See C. Drennan's talk
- 1.02.05 Gamma-t system
  - Ongoing studies look encouraging
  - Made decision to scrap existing magnets when we install the new correctors
  - If system is useful, will build (12) new magnets between now and then)
- 1.02.11 Booster Dump Relocation
  - *Review going on in WH12NW as we speak, HOWEVER*
  - Considering rather significant change to kicker location
  - Will be ready for shutdown
- 1.02.12 Booster RF Improvements
  - NEW SCOPE
  - Significant refurbishment plan for Booster modulators
  - Waiting for recommendations of 1.02.01

Progress

Main Injector

- 1.03.01 Large Aperture Quads –
  - On track for shutdown
- 1.03.02 Collimation –
  - MI-8 Collimator design complete and reviewed
  - Will go in in shutdown
  - Working on conceptual MI ring collimation
- 1.03.03 NuMI MultiBatch Operations –
  - Regularly deliver 5 batches at (Total 2.1E13 protons) to NuMI target
  - Aim to start slipstacking earlier than anticipated
- 1.03.04 RF Upgrade –
  - Discussed shortly

Studies

- 1.05 Proton Study Group–
  - Preliminary report delivered to PAC on recycler retasking
  - Overall report delayed by some more grandiose proposals than we anticipated.
  - Hope to have a final report by 8/1

Main Injector RF (1.03.04)

- Great progress has been made in understanding the limitations of the existing feed forward system.
  - Calculations
  - Beam studies
- News is good
  - The *preliminary* result is that the capacity of the RF system is >5.5E13 protons with no significant RF upgrade
- Working on specifications for going to 6E13 in the most conservative scenario (i.e. upgrade some fraction of cavities to 2 PA's)
- This will free up a significant amount of money for other activities (e.g. Booster RF modulator refurbishment)
- Prototype tests proceed, but have been delayed due to badly overcommitted RF group

Near Term Priorities

- Prepare for shutdown!!!
  - 400 MeV Line+ORBUMP
  - Booster dump relocation
  - MI large aperture quads
- Prepare for baseline review
  - Working on Design Handbook
  - Settling on scope of baseline (B. Baller's talk)